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RESEARCH ON EYE MOVEMENT DESENSITIZATON AND REPROCESSING (EMDR) AS A TREATMENT FOR PTSD

Richard J. McNally, PhD

Ten years ago Shapiro (1989) modified Wolpe's (1958) systematic desensitization therapy by replacing progressive muscle relaxation with induced eye movements as the "reciprocal inhibitor" of distress. Designed originally as a treatment for traumatic memories, it was called Eye Movement Desensitization (EMD). Its essence was as follows. After identifying a traumatic target memory, the therapist would have the client articulate a self-referent "negative cognition" associated with the memory (e.g., "I am shameful") and a "positive cognition" (e.g., "I am honorable") to replace the negative one. The therapist would then move her fingers back and forth in front of the client's eyes, instructing the client to track her fingers visually while concentrating on the distressing memory. After each set of 10-12 eye movements, the therapist would ask the client to provide ratings of distress and strength of belief in the positive cognition. The therapist would repeat this procedure until distress subsided and belief in the positive cognition increased.

According to Shapiro (1989), a single 50-minute session of EMD was 100% successful in abolishing distress associated with a traumatic memory in survivors of combat, rape, and childhood sexual or emotional abuse. To explain these impressive results, she hypothesized that "the crucial component of the EMD procedure is the repeated eye-movements while the memory is maintained in awareness" (Shapiro, 1989, p. 220).

Shortly thereafter, Shapiro reconceptualized EMD in terms of "accelerated information processing" and renamed it Eye Movement Desensitization and Reprocessing (EMDR). The shift from EMD to EMDR appears more conceptual than procedural. The treatment, as described in a recent text (Shapiro, 1995), is very similar to the original description (Shapiro, 1989), and Shapiro (1996) herself refers to her clinical trial as a "controlled study of EMDR" (p. 211). Following Shapiro (1995, pp. 324-336), I use the term "EMDR" in this article to denote both EMD and EMDR studies.

Interest sparked by Shapiro's (1989) report has resulted in many studies testing the efficacy of EMDR for trauma-exposed people. There have been three kinds of randomized, controlled trials: comparisons against a wait-list, comparisons against other treatments, and dismantling studies that test the active ingredients of EMDR.

EMDR versus Wait-list Control Conditions. Wilson et al. (1995, 1997) reported significantly better results for trauma-exposed patients treated with EMDR than for those randomized to a wait-list. Although sufficiently distressed to seek therapy, nearly two-thirds of Wilson et al.'s patients fell short of qualifying for a diagnosis of PTSD when they entered the study. Rothbaum (1997), however, reported similarly favorable results for rape survivors, all of whom met criteria for PTSD. She found EMDR markedly more effective than a wait-list.

Comparing an intervention against no treatment is common in psychotherapy research, especially for new approaches. This design controls for certain threats to internal validity (e.g., "spontaneous" remission associated with the mere passage of time). However, studies testing a treatment versus a wait-list cannot exclude the possibility that whatever benefits achieved are merely the consequence of nonspecific ("placebo") factors common to all psychotherapies. Consistent with this possibility, response to EMDR is strongly related to suggestibility in patients with PTSD ($r = .86$; Forbes et al., 1994).

EMDR versus Other Treatments. Some randomized trials have involved comparisons between EMDR and other treatments. An advantage to this approach is that two (or more) treatments are directly compared on patients drawn from the same pool. Inferences about relative efficacy of different treatments are stronger than if comparisons are

(Continued on Page 2)

CONTROL GROUPS IN PSYCHOTHERAPY RESEARCH

Paula P. Schnurr, Ph.D.

A good understanding of the role of control groups in psychotherapy research is necessary for interpreting the results of studies designed to evaluate the efficacy of EMDR or other psychological interventions. The goal in a true experiment is to hold all irrelevant variables constant while manipulating the variable(s) of interest. Accomplishing this level of control in a drug study is relatively straightforward given that excellent control can be provided by administration of a placebo that appears identical to the drug under investigation. In a psychotherapy study, it is not possible to achieve this level

(Continued on Page 8)

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made across trials that involve different therapists, different sites, and potentially different kinds of patients (e.g., that vary in chronicity, comorbidity). Comparison of a treatment against another intervention controls (at least partly) for nonspecific effects common to any psychosocial intervention. This design provides a stricter test of a treatment than one incorporating only a wait-list control condition.

Jensen (1994) found no difference between the effects of EMDR and those of treatment-as-usual in combat veterans with PTSD, whereas Marcus et al. (1997) found that EMDR was more effective than treatment-as-usual (e.g., either psychodynamic, cognitive, or behavioral) for trauma patients in an HMO setting. Although treatments contrasted with EMDR possessed ecological validity, they were unstandardized, rendering it difficult to tell whether they were delivered appropriately.

Vaughan et al. (1994) found no differences among the effects of EMDR, applied relaxation, and "image habituation training" in cases of civilian PTSD, although all treatments were better than a wait-list. Another study indicated superiority of EMDR over Rogerian active listening therapy in young women with histories of physical and sexual abuse (Scheck et al., 1998), and still another indicated greater efficacy of EMDR relative to relaxation training and biofeedback in veterans with combat-related PTSD (Carlson et al., 1998).

Three out of five studies indicated superiority of EMDR relative to a contrast treatment. At the very least, studies showing greater effects of EMDR over Rogerian active listening, relaxation, and so forth strongly imply that EMDR contains an active ingredient not shared by these interventions (e.g., graduated, structured imaginal exposure). These studies are best interpreted as controlling for nonspecific, "placebo" factors common to any psychotherapy rather than as comparisons of EMDR to an established intervention. That is, there is no convincing evidence that relaxation or Rogerian therapy, for example, are effective treatments for PTSD.

Only one controlled trial has directly compared EMDR with a reasonably well-established treatment for PTSD. In this study, Devilly and Spence (in press) randomized civilian PTSD patients to either EMDR or to a cognitive-behavioral intervention inspired by Foa's work (see Foa & Rothbaum, 1998). The results revealed that both EMDR and CBT significantly reduced symptoms in civilian PTSD, but CBT was significantly more effective and better tolerated than EMDR. At follow-up, patients treated with CBT continued to improve, whereas those treated with EMDR had begun to relapse.

Dismantling Studies. The hallmark characteristic of EMDR is induced eye movement; this feature distinguishes it from other imaginal desensitization approaches. Because Shapiro (1989) conjectured that eye movement was responsible for EMDR's apparently powerful effects, researchers have compared EMDR to EMDR without eye movements (e.g., patients focused their eyes without moving them or the therapist tapped the patient's fingers; Boudewyns & Hyer, 1996; Devilly et al., 1998; Gosselin & Matthews, 1995; Pitman et al., 1996; Renfrey & Spates, 1994; Wilson et al., 1996). In all but one of the aforementioned dismantling studies, the effects of EMDR did not differ from the effects of EMDR minus eye movements; unfortunately, the study suggesting positive effects of eye movements (Wilson et al., 1996) has been criticized for statistical and methodological problems (Lohr et al., 1998). Taken together, these studies fail to support the hypothesis that eye movement is "the crucial component" (Shapiro, 1989, p. 220) in EMDR.

Two interpretations of these "dismantling" studies prevail. According to one view, what is effective in EMDR (imaginal exposure) is not new, and what is new (eye movements) is not effective (McNally, in press-a). Consistent with this interpretation, a meta-analysis revealed that EMDR produced effects similar to those produced by conventional behavioral and cognitive-behavior therapy (CBT) treatments for PTSD (Van Etten & Taylor, 1998).

According to the other view, studies involving comparisons with EMDR to other control manipulations (e.g., finger tapping) have merely compared two versions of EMDR because all "dual stimulation" procedures are deemed fungible with eye movements (Shapiro, 1994). Moreover, Shapiro (1995, p. 95) has also classified "forced fixation" (of the eyes, presumably) as another acceptable variant of EMDR.

EMDR clinicians have also argued that researchers who have reported unimpressive results for EMDR have either been inadequately trained or have not confirmed that they performed the EMDR protocol with sufficient fidelity (Greenwald, 1996). But therapists had been trained in sanctioned EMDR workshops in 15 out of 16 studies, as documented in one recent review (Lohr et al., 1998), and there is no convincing evidence that fidelity to protocol predicts outcome in EMDR treatment (e.g., Pitman et al., 1996; Rosen, in press). Indeed, if eye movements are therapeutically inert, it should not matter how one induces them (McNally, in press-a). As a number of psychologists have emphasized (e.g., Rosen & Lohr , 1997; Rosen et al., 1998), the burden of proof rests on EMDR advocates to demonstrate that eye movements actually have therapeutic effects; assuming that eye movements are active (until proven otherwise) is tantamount to requesting that critics prove the null hypothesis.

EMDR as a Treatment for Other Anxiety Disorders. EMDR has been tested as a treatment for anxiety disorders other than PTSD. Controlled studies have shown that EMDR is less effective than established behavioral treatments for phobic disorders (Muris et al., 1997, 1998), and its effect on panic disorder appears modest (Feske & Goldstein, 1997) relative to established cognitive-behavioral methods (McNally, 1994, pp. 139-164). Feske and Goldstein (1997) found that EMDR was no more effective than a condition involving eye fixation at three months posttreatment, although both conditions were more effective than a wait-list control. They concluded "that EMDR should not be the first-line treatment for this severe anxiety disorder" (Feske

& Goldstein, 1997, p. 1034). Finally, EMDR clinicians affirm its utility in the treatment of other problems (e.g., delusions, learning disabilities, couples therapy, AIDS, cancer, paranoid schizophrenia, eating disorders; see Singer & Lalich, 1996, p. 187, for a convenient summary), but controlled studies are lacking.

Summary. Although the marketing of EMDR has provoked many lively debates, the purpose of the present article is merely to provide a "road map" to the literature on randomized, controlled trials. Discussion of the sociological, historical, and economic dimensions of EMDR is available elsewhere (e.g., DeBell & Jones, 1997; Greenwald, in press; McNally, in press-b; Rosen et al., 1998).

In summary, there are two sharply divergent views regarding what clinical scientists should do next regarding EMDR. On the one hand, some people believe that further research on EMDR is needed (e.g., Shapiro, 1995). According to this view, more controlled trials comparing EMDR to other effective treatments are warranted. Indeed, EMDR has been compared to an established PTSD treatment in only one trial (Devilly & Spence, in press). On the other hand, others believe that further research on EMDR qua EMDR is unnecessary (e.g., Rosen et al., 1998). According to this view, EMDR is distinguished from traditional desensitization treatments by its addition of induced eye movements to imaginal exposure, and if the defining element of EMDR is therapeutically inert, then there is little reason to investigate EMDR qua EMDR.

Finally, there is at least one point on which EMDR advocates and critics can agree. People should read the primary literature carefully, and arrive at their own conclusions regarding the merit of the method.

REFERENCES

FOA, E.B. & ROTHBAUM, B.O. (1998). *Treating the trauma of rape: Cognitive-behavioral therapy for PTSD.* New York: Guilford Press.

MCNALLY, R.J. (1994). *Panic disorder: A critical analysis.* New York: Guilford Press.

SINGER, M.T. & LALICH, J. (1996). *" Crazy" therapies: What are they? Do they work?* San Francisco: Jossey-Bass.

WOLPE, J. (1958). *Psychotherapy by reciprocal inhibition.* Stanford: Stanford University Press.

SELECTED ABSTRACTS

BOUDEWYNS, P.A. & HYER, L.A. (1996). **Eye movement desensitization and reprocessing (EMDR) as treatment for posttraumatic stress disorder (PTSD).** *Clinical Psychology and Psychotherapy, 3,* 185-195. EMDR is a new and controversial cognitive-behavioural treatment technique that combines cognitive processing and exposure methodology to treat conditioned emotional responding and other trauma-related symptoms. EMDR is controversial in part due to initial excessive claims by its originator, Francine Shapiro, and also because of what many believe to be Shapiro's proprietary emphasis in controlling who may use the technique with patients. In this paper our aim is to take an objective look at the process and effectiveness of this technique. The purpose here is to (1) offer a brief objective review of the outcome literature to date on EMDR; (2) present a short summary of results of an 'early look' at an ongoing controlled study of this method that we are presently conducting; (3) speculate on the merits of this approach based on both scientific and clinical experience with EMDR and (4) offer a brief description of the evolved process of EMDR along with a commentary on that process.

CARLSON, J.G., CHEMTOB, C.M., RUSNAK, K., HEDLUND, N.L., MURAOKA, M.Y. (1998). **Eye movement desensitization and reprocessing (EMDR) treatment for combat-related posttraumatic stress disorder.** *Journal of Traumatic Stress, 11,* 3-24. Despite the clinical and social impact of PTSD, there are few controlled studies investigating its treatment. In this investigation, the effectiveness of two psychotherapeutic interventions for PTSD were compared using a randomized controlled outcome group design. 35 combat veterans diagnosed with combat-related PTSD were treated with either (a) 12 sessions of EMDR (n = 10), (b) 12 sessions of biofeedback-assisted relaxation (n = 13), or (c) routine clinical care, serving as a control (n = 12). Compared with the other conditions, significant treatment effects in the EMDR condition were obtained at posttreatment on a number of self-report, psychometric, and standardized interview measures. Relative to the other treatment group, these effects were generally maintained at 3-month follow-up. Psychophysiological measures reflected an apparent habituation effect from pretreatment to posttreatment but were not differentially affected by treatment condition.

DEBELL, C. & JONES, R.D. (1997). **As good as it seems?: A review of EMDR experimental research.** *Professional Psychology: Research and Practice, 28,* 153-163. The article reviews 7 experimental studies that examined EMDR treatment. The 7 studies varied greatly in their complexity, their designs, how treatment effects were measured, and their results. Each study is detailed and critically examined. A summary of results is provided as well as suggestions for clinical application and future research. In addition, questions are raised regarding F. Shapiro's approach to disseminating information about EMDR.

DEVILLY, G.J. & SPENCE, S.H. (in press). **The relative efficacy and treatment distress of EMDR and a cognitive behavioral trauma treatment protocol in the amelioration of posttraumatic stress disorder.** *Journal of Anxiety Disorders.* The growing body of research into treatment efficacy with PTSD has, by-and-large, been limited to evaluating treatment components or comparing a specific treatment against wait-list controls. This has led to 2 forms of treatment, EMDR and Cognitive Behavioral Therapy (CBT), vying for supremacy without a controlled study actually comparing them. This research compared EMDR and a CBT variant (Trauma Treatment Protocol, TTP) in the treatment of PTSD, via a controlled, clinical study using therapists trained in both procedures. It was found that TTP was both statistically and clinically more effective in reducing pathology related to PTSD and that this superiority was maintained and, in fact, became more evident by 3-month follow-up. These results are discussed in terms of past research and directions for future research are suggested.

DEVILLY, G.J., SPENCE, S.H., & RAPEE, R.M. (1998). **Statistical and reliable change with eye movement desensitization**

and reprocessing: Treating trauma within a veteran population. *Behavior Therapy, 29,* 435-455. Fifty-one war veterans with PTSD symptomatology were randomly allocated to 1 of 3 conditions: 2 sessions of EMDR, an equivalent procedure without EMDR, or a standard psychiatric support control condition. There was an overall significant main effect of time from pre- to posttreatment, with a reduction in symptomatology for all groups. However, no statistically significant differences were found between the groups. Participants in the 2 treatment conditions were more likely to display reliable improvement in trauma symptomatology than subjects in the control group. By 6-month follow-up, reductions in symptomatology had dissipated and there were no statistical or reliable differences between the 2 treatment groups. Overall, the results indicated that, with this war veteran population, improvement rates were less than has been reported in the past. Also, where improvements were found, eye movements were not likely to be the mechanism of change. Rather, the results imply that other nonspecific or therapeutic processes may account for any beneficial effects of EMDR.

JENSEN, J.A. (1994). **An investigation of eye movement desensitization and reprocessing (EMD/R) as a treatment for posttraumatic stress disorder (PTSD) symptoms of Vietnam combat veterans.** *Behavior Therapy, 25,* 311-325. EMDR was investigated with 25 Vietnam combat veterans with PTSD, randomly assigned to EMDR or a control condition. First, PTSD was assessed and subjects were assisted in developing a PTSD-related treatment goal. Subjective anxiety and a belief in a positive cognition related to war trauma were also assessed. Second, EMDR subjects were then seen for one history-taking session and two treatment sessions. Approximately 17 days after the initial assessment, repeat assessments of PTSD symptomatology, goal attainment, subjective anxiety, and belief in desired positive cognitions were conducted. Overall, EMDR showed little effectiveness in this study. Although effective in reducing in-session subjective anxiety, EMDR was not effective in improving other PTSD symptoms, in contributing to goal attainment, or in increasing subjects' beliefs in their desired positive cognition. The results imply that EMDR may not be successful in treating Vietnam combat veterans with PTSD.

LOHR, J.M., TOLIN, D.F., & LILIENFELD, S.O. (1998). **Efficacy of eye movement desensitization and reprocessing: Implications for behavior therapy.** *Behavior Therapy, 29,* 123-156. The commitment of behavior therapy to empiricism has led it to a prominent position in the development of validated methods of treatment. The recent development and rapid expansion of EMDR, a treatment that bears a resemblance to behavioral techniques and that has been proposed as an alternative to such techniques for numerous psychological disorders, raises important questions for the field of behavior therapy. In this article, we examine 17 recent studies on the effectiveness of EMDR and the conceptual analysis of its mechanisms of action. The research we review shows that (a) the effects of EMDR are limited largely or entirely to verbal report indices, (b) eye movements appear to be unnecessary for improvement, and (c) reported effects are consistent with non-specific procedural artifacts. Moreover, the conceptual analysis of EMDR is inconsistent with scientific findings concerning the role of eye movements. Implications of the empirical and theoretical literature on EMDR for behavior therapy are discussed.

MARCUS, S.V., MARQUIS, P., & SAKAI, C. (1997). **Controlled study of treatment of PTSD using EMDR in an HMO setting.** *Psychotherapy, 34,* 307-315. Sixty-seven individuals diagnosed with PTSD were randomly assigned to either EMDR treatment or Standard Care (SC) treatment. Participants were assessed pretreatment, after 3 sessions, and at the completion of treatment using the Symptom Checklist-90, Beck Depression Inventory, Impact of Events Scale, Modified PTSD Scale, Spielberger State-Trait Anxiety Inventory, and Subjective Units of Disturbance. In addition, an independent evaluator assessed participants using DSM-III-R criteria for PTSD including Global Assessment of Functioning at the 3 data points. The individuals in the EMDR treatment group showed significantly greater improvement with greater rapidity than those in the SC treatment group on measures of PTSD, depression, anxiety, and general symptoms. Participants who received EMDR treatment used fewer medication appointments for their psychological symptoms and needed fewer psychotherapy appointments.

MCNALLY, R.J. (in press-b). **EMDR and mesmerism: A comparative historical analysis.** *Journal of Anxiety Disorders.* EMDR is among the fastest growing interventions in the annals of psychotherapy. Although many psychologists have commented on its presumably unusual origins and dissemination, history reveals its many parallels with Mesmerism, a previous therapy that spread rapidly throughout 18th century Europe and America. The purpose of this article is to document the many striking similarities between the history of Mesmerism and the history of EMDR.

PITMAN, R.K., ORR, S.P., ALTMAN, B., LONGPRE, R.E., POIRE, R.E., & MACKLIN, M.L. (1996). **Emotional processing during eye movement desensitization and reprocessing therapy of Vietnam veterans with chronic posttraumatic stress disorder.** *Comprehensive Psychiatry, 37,* 419-429. This study examined emotional processing and outcome in 27 Vietnam veterans with chronic PTSD who underwent EMDR therapy, with and without the eye movement component, in a crossover design. Results supported the occurrence of partial emotional processing, but there were no differences in its extent in the eye-movement versus eyes-fixed conditions. Therapy produced a modest to moderate overall improvement, mostly on the Impact of Event Scale. There was slightly more improvement in the eyes-fixed than eye-movement condition. There was little association between the extent of emotional processing and therapeutic outcome. In our hands, EMDR was at least as efficacious for combat-related PTSD as imaginal flooding proved to be in a previous study, and was better tolerated by subjects. However, results suggest that eye movements do not play a significant role in processing of traumatic information in EMDR and that factors other than eye movements are responsible for EMDR's therapeutic effect.

ROSEN, G.M. (in press). **Treatment fidelity and research on eye movement desensitization and reprocessing (EMDR).** *Journal of Anxiety Disorders.* EMDR was introduced by F. Shapiro (1989) as a treatment for PTSD. When controlled studies failed to support the extraordinarily positive findings and claims made by Shapiro, proponents of EMDR raised the issue of treatment fidelity and criticized researchers for being inadequately trained. This paper considers the issues raised by EMDR proponents. It is concluded that treatment fidelity has been used as a specious, distracting issue that permits the continued promotion of EMDR in the face of negative empirical findings. Clinical psychologists are urged to remember the basic tenets of science when evaluating extraordinary claims made for novel techniques.

ROTHBAUM, B.O. (1997). **A controlled study of eye movement desensitization and reprocessing in the treatment of posttraumatic stress disordered sexual assault victims.** *Bulletin of the Menninger Clinic, 61,* 317-334. EMDR is a new method developed to treat PTSD. This study evaluated the efficacy of EMDR compared to a no-treatment wait-list control in the treatment of PTSD in adult female sexual assault victims. 21 subjects were entered and 18 completed. Treatment was delivered in 4 weekly individual sessions. Assessments were conducted pre- and posttreatment and 3 months following treatment termination by an independent assessor kept blind to treatment condition. Measures included standard clinician- and self-administered PTSD and related psychopathology scales. Results indicated that subjects treated with EMDR improved significantly more on PTSD and depression from pre- to posttreatment than control subjects, leading to the conclusion that EMDR was effective in alleviating PTSD in this study.

SCHECK, M.M., SCHAEFFER, J.A., & GILLETTE, C. (1998). **Brief psychological intervention with traumatized young women: The efficacy of eye movement desensitization and reprocessing.** *Journal of Traumatic Stress, 11,* 25-44. To study the efficacy of EMDR with traumatized young women, 60 women between the ages of 16 and 25 were randomly assigned to 2 sessions of either EMDR or an active listening (AL) control. Factorial ANOVA interaction effects and simple main effects for measures (Beck Depression Inventory, State-Trait Anxiety Inventory, Penn Inventory for PTSD, Impact of Event Scale, Tennessee Self-Concept Scale) indicated significant improvement for both groups and significantly greater pre-post change for EMDR-treated participants. Pre-post effect sizes for the EMDR group averaged 1.56 compared to 0.65 for the AL group. Despite treatment brevity, the posttreatment outcome variable means of EMDR-treated participants compared favorably with nonpatient or successfully treated norm groups on all measures.

SHAPIRO, F. (1989). **Efficacy of the Eye Movement Desensitization procedure in the treatment of traumatic memories.** *Journal of Traumatic Stress, 2,* 199-223. The aim of the study was to determine the effectiveness of the recently developed Eye Movement Desensitization (EMD) procedure on traumatic memory symptomatology. 22 subjects suffering from symptoms related to traumatic memories were used in the study. All had been victims of traumatic incidents concerning the Vietnam War, childhood sexual molestation, sexual or physical assault, or emotional abuse. Memories of the traumatic incident were pivotal to the presenting complaints which included intrusive thoughts, flashbacks, sleep disturbances, low self-esteem, and relationship problems. Dependent variables were (1) anxiety level, (2) validity of a positive self-statement / assessment of the traumatic incident, and (3) presenting complaints. These measures were obtained at the initial session and at 1- and 3-month follow-up sessions. The results of the study indicated that a single session of the EMD procedure successfully desensitized the subjects' traumatic memories and dramatically altered their cognitive assessments of the situation, effects that were maintained through the 3-month follow-up check. This therapeutic benefit was accompanied by behavioral shifts which included the alleviation of the subjects' primary presenting complaints.

SHAPIRO, F. (1995). *Eye movement desensitization and reprocessing: Basic principles, protocols, and procedures.* New York: Guilford Press. This book reviews research and development; discusses theoretical constructs and possible underlying mechanisms; and presents protocols and procedures for treatment of adults and children with a range of complaints. Among the many clinical populations for whom the material in this volume is applicable are victims of sexual abuse, violence, combat, grief, and phobias. To assist the learning process, detailed descriptions transcripts guide the clinician through every stage of therapeutic treatment, ranging from the safety issues necessary for appropriate client selection through the administration of EMDR and its integration within a comprehensive treatment plan. Only licensed mental health professionals, or those under direct supervision of licensed clinicians, should use the procedures and protocols in this book. The book has been written with four kinds of readers in mind: academicians, researchers, clinicians, and clinical graduate students. [Adapted from Text]

VAUGHAN, K., ARMSTRONG, M.S., GOLD, R., O'CONNOR, N., JENNEKE, W., & TARRIER, N. (1994). **A trial of eye movement desensitization compared to image habituation training and applied muscle relaxation in post-traumatic stress disorder.** *Journal of Behavior Therapy and Experimental Psychiatry, 25,* 283-291. 36 patients with PTSD were randomly allocated to individual treatment with imaginal exposure (image habituation training — IHT), or applied muscle relaxation (AMR) or eye movement desensitization (EMD). Assessment by a blind independent rater and self-report instrument applied pre and posttreatment and at 3-month follow-up indicated that all groups improved significantly compared with a waiting list and that treatment benefits were maintained at follow-up. Despite a failure to demonstrate differences among groups, there was some suggestion that immediately after treatment EMD was superior for intrusive memories.

WILSON, D.L., SILVER, S.M., COVI, W.G., & FOSTER, S. (1996). **Eye movement desensitization and reprocessing: Effectiveness and autonomic correlates.** *Journal of Behavior Therapy and Experimental Psychiatry, 27,* 219-229. 18 subjects distressed by memories of a specific traumatic event were randomly assigned to a single session of 1 of 3 conditions: EMDR, a Time Interval Condition (TIC), or Tapping Alternate Phalanges (TAP). All subjects treated in the EMDR group showed desensitization as monitored by SUDs, which correlated with the physiological data and cessation of pronounced symptomatology. Only 1 subject in a control group showed desensitization. Compared to TIC and TAP, autonomic measures showed distinct changes during EMDR: (1) respiration synchronized with the rhythm of the eye movements in a shallow, regular pattern; (2) heart rate slowed significantly overall; (3) systolic blood pressure increased during early sets, invariably declined during abreactions, and decreased overall; (4) fingertip skin temperature consistently increased; and (5) the galvanic skin response consistently decreased in a clear "relaxation response." This relaxing effect of the eye movements suggests that at least one of the mechanisms operating during EMDR is desensitization by reciprocal inhibition, by pairing emotional distress with an unlearned or "compelled" relaxation response.

WILSON, S.A., BECKER, L.A., & TINKER, R.H. (1995). **Eye movement desensitization and reprocessing (EMDR) treatment for psychologically traumatized individuals.** *Journal of Consulting and Clinical Psychology, 63,* 928-937. The effects of 3 90-minute EMDR treatment sessions on traumatic memories of 80 participants were studied. Participants were randomly assigned to treatment or delayed-treatment conditions and to 1 of 5 licensed therapists trained in EMDR. Participants receiving EMDR showed decreases in presenting complaints and in anxiety and increases

in positive cognition. Participants in the delayed-treatment condition showed no improvement on any of these measures across the 30 days before treatment, but after treatment participants in the delayed-treatment condition showed similar effects on all measures. The effects were maintained at 90-day follow-up.

ADDITIONAL CITATIONS
Annotated by the Editors

FESKE, U. (1998). **Eye movement desensitization and reprocessing treatment for posttraumatic stress disorder.** *Clinical Psychology: Science and Practice, 5,* 171-181.

Critically reviews the empirical evaluations of EMDR and concludes that more research is needed. Attention to several issues is suggested: control conditions, dose, treatment fidelity and quality, and long-term follow-up. Further research into the mechanisms underlying the efficacy of EMDR is suggested.

FESKE, U. & GOLDSTEIN, A.J. (1997). **Eye movement desensitization and reprocessing treatment for panic disorder: A controlled outcome and partial dismantling study.** *Journal of Consulting and Clinical Psychology, 65,* 1026-1035.

Randomly assigned 43 panic disorder patients to 6 sessions of EMDR, EMDR without eye movements, or a waiting list. At posttreatment, the EMDR group differed from the wait list participants on all primary outcomes, and from the EMDR without eye movements group on 2 of 5 primary outcomes. The two EMDR groups did not differ at 3-month follow-up.

FOA, E.B. & MEADOWS, E.A. (1997). **Psychosocial treatments for posttraumatic stress disorder: A critical review.** *Annual Review of Psychology, 48,* 449-480.

Critically reviews the empirical literature on PTSD treatment. The authors provide information about assessment and methods for treatment outcome research, along with information about crisis intervention, hypnotherapy, psychodynamic treatment, and cognitive-behavioral treatment, including EMDR. Considerations for special populations are included.

FORBES, D., CREAMER, M., & RYCROFT, P. (1994). **Eye movement desensitization and reprocessing in posttraumatic stress disorder: A pilot study using assessment measures.** *Journal of Behavior Therapy and Experimental Psychiatry, 25,* 113-120.

Administered EMDR to 5 men and 3 women who had PTSD. PTSD and other symptoms improved from pretreatment to posttreatment and remained low at follow-up. Four patients no longer met criteria for PTSD at follow-up, and improvement was associated with decreases in muscle tension.

GOSSELIN, P. & MATTHEWS, W.J. (1995). **Eye movement desensitization and reprocessing in the treatment of test anxiety: A study of the effects of expectancy and eye movement.** *Journal of Behavior Therapy and Experimental, 26,* 331-337.

Randomly assigned 41 undergraduates with test anxiety to receive EMDR with or without eye movements under conditions of either high or low expectancy. Improvement in anxiety was observed for both EMDR conditions, and there were no effects of expectancy.

GREENWALD, R. (1996). **The information gap in the EMDR controversy.** *Professional Psychology: Research and Practice, 27,* 67-72.

Argues that the pronounced differences in the EMDR literature between favorable and unfavorable positions can be traced to an information gap between those with and those without formal EMDR training. Treatment fidelity is presented as a critical factor, and suggestions are presented for publication standards, research, and training.

GREENWALD, R. (in press). **The power of suggestion: Comment on "EMDR and Mesmerism: A comparative historical analysis."** *Journal of Anxiety Disorders.*

Critiques McNally's (in press-b) comparative analysis of EMDR and mesmerism. Among the criticisms offered are an unstated anti-EMDR agenda and a lack of references favorable to EMDR. Suggestions for future research are provided.

MCNALLY, R.J. (in press-a). **On eye movements and animal magnetism: A reply to Greenwald's defense of EMDR.** *Journal of Anxiety Disorders.*

McNally (in press-b) responds to a criticism by Greenwald (in press) of the paper by McNally (in press-b). The author refutes Greenwald's claims that his purpose was to debunk EMDR.

MURIS, P., MERCKELBACH, H., HOLDRINET, I., & SIJSENAAR, M. (1998). **Treating phobic children: Effects of EMDR versus exposure.** *Journal of Consulting and Clinical Psychology, 66,* 193-198.

Randomly assigned 26 spider-phobic children to receive either EMDR, in vivo exposure, or an exposure control treatment. After evaluating the effectiveness of these interventions, the investigators delivered in vivo exposure to all children. Only exposure showed effectiveness on all outcome measures after the initial treatment; EMDR showed effectiveness on self-reported phobia but not on behavioral avoidance.

MURIS, P., MERCKELBACH, H., VAN HAAFTEN, H., & MAYER, B. (1997). **Eye movement desensitization and reprocessing versus exposure in vivo: A single-session crossover study of spider-phobic children.** *British Journal of Psychiatry, 171,* 82-86.

Randomly assigned 22 spider-phobic children to receive EMDR and in vivo exposure in a cross-over design. The treatments were comparable in terms of their effects on self-reports. Although both treatments had effects on behavioral avoidance, exposure was relatively more effective.

RENFREY, G. & SPATES, C.R. (1994). **Eye movement desensitization: A partial dismantling study.** *Journal of Behavior Therapy and Experimental Psychiatry, 25,* 231-239.

Randomly assigned 23 participants to one of 3 conditions: EMDR; EMDR with eyes fixed; and EMDR in which eye movement was stimulated by a light tracking task. All groups improved at posttest and were comparable in the amount of treatment gains, which were maintained at 1-3 month follow-up.

ROSEN, G.M. & LOHR, J. (1997). **Can eye movements cure mental ailments?** *NCAHF* [National Council Against Health Fraud] *Newsletter: Quality in the Health Marketplace, 20,* 1.

Critically comments on the development of EMDR and on the acceptance of the technique by professionals before the value of eye movements was empirically evaluated.

ROSEN, G.M., LOHR, J.M., MCNALLY, R.J., & HERBERT, J.D. (1998). **Power Therapies, miraculous claims, and the cures that fail.** *Behavioural and Cognitive Psychotherapy, 26,* 99-101.

Comments on a class of new therapeutic techniques that have been promoted as rapid treatments for PTSD and other disorders, with EMDR described as the most widely known of these tech-

niques. Questions about the theoretical foundations for these techniques are raised.

ROSEN, G.M., MCNALLY, R.J., LOHR, J.M., DEVILLY, G.J., HERBERT, J.D., & LILIENFELD, S.O. (1998). **A realistic appraisal of EMDR.** *California Psychologist, 31,* 25, 27.

Critically comments on several issues related to the interpretation of the efficacy data from EMDR: the comparable efficacy observed with eyes-fixed control conditions, the other components of EMDR, and the question of treatment fidelity in studies that failed to find support for EMDR.

SHAPIRO, F. (1994). **Alternative stimuli in the use of EMD(R) [letter].** *Journal of Behavior Therapy and Experimental Psychiatry, 25,* 89.

Notes that EMDR training includes instruction on the use of hand taps and auditory signals as alternative to eye movements in EMDR. Suggestions for future research are offered.

SHAPIRO, F. (1996). **Eye Movement Desensitization and Reprocessing (EMDR): Evaluation of controlled PTSD research.** *Journal of Behavior Therapy and Experimental Psychiatry, 27,* 209-218.

Critically reviews the controlled studies of EMDR for treating PTSD and concludes that the bulk of the evidence supports EMDR as an empirically-validated treatment. The author argues that some studies have been clinically inadequate and suggests standards for future research including fidelity checks, the use of appropriate measures, and assessment of comorbid conditions.

VAN ETTEN, M.L. & TAYLOR, S. (1998). **Comparative efficacy of treatments for posttraumatic stress disorder: A meta-analysis.** *Clinical Psychology and Psychotherapy, 5,* 126-144.

Conducted a meta-analysis of 61 studies of treatment for PTSD. Psychological therapies were more effective than drug therapies. EMDR and behavior therapy were the most effective psychological therapies and were comparable in terms of their effectiveness across outcomes.

WILSON, S.A., BECKER, L.A., & TINKER, R.H. (1997). **Fifteen-month follow-up of eye movement desensitization and reprocessing (EMDR) treatment for posttraumatic stress disorder and psychological trauma.** *Journal of Consulting and Clinical Psychology, 65,* 1047-1056.

Conducted a 15-month follow-up of 66 patients who were previously treated with EMDR. Treatment gains were comparable among the 32 patients with PTSD and the 34 who did not have PTSD. Substantial treatment effects remained at follow-up, with an average treatment effect size of 1.59.

PILOTS UPDATE

The PILOTS database can be used to find many kinds of information on treatments for PTSD. The PILOTS Thesaurus contains descriptors for recognized therapies, and new ones are added when it becomes apparent that the literature warrants them. The descriptor "eye movement desensitization" is applied to all publications on EMDR, so it is easy to locate papers on this subject. If you are using the Web interface to the PILOTS database, just pull down the list of search indexes, select "descriptor" and type "eye movement desensitization" into the box. There are more than 40 descriptors for the various psychotherapies, as well as 18 for drug therapies and several for other forms of treatment.

What if you are searching for literature on a very new or a very specialized treatment, and you can find no appropriate descriptor in the PILOTS Thesaurus? Then you should use natural language searching. Select "topic" from the list of search indexes, and type in the word or phrase that best describes what you are looking for. For example, if you were looking for literature on dimensional therapy, you would type in those two words. If they appeared in either the title or the abstract of one or more documents indexed in the database, your search would retrieve those publications. (As this is written, that phrase occurs in neither PILOTS nor PSYCINFO, but there is no telling when somebody will apply it to a newly conceived treatment.)

You can use the PILOTS database to refine the search further by focusing on a particular approach to a treatment. The descriptor "treatment effectiveness" is applied to all papers that attempt to evaluate the efficacy of a treatment, and when appropriate "clinical trial" or "randomized clinical trial" is used to show how that evaluation was reached. Or perhaps your concern is with the mechanics of administering a treatment. The descriptor "psychotherapeutic processes" is applied to those publications that examine the interaction between therapist and patient. Specific aspects of that interaction are indexed under "countertransference" or "transference," and "manual-based treatments" is used when the paper discusses the use of a treatment manual.

As with any kind of literature searching, there is a trade-off between simplicity and power. The Web interface to the PILOTS database permits quick, easy searching of the literature, but does not support the complex combination of terms and result sets that the more robust but less user-friendly textual interface allows. The Web interface offers an "expert search" option that contains some of the advanced features found in the textual interface.

It is a good idea to regard literature searching as an area of expertise comparable to statistical methodology. If you suspect that your research requires more familiarity with the techniques of bibliographical database searching than you possess, you would be well advised to consult an expert: a reference librarian or an experienced literature searcher. In designing the PILOTS database, we have tried to follow the adage that "things should be made as simple as possible—but no simpler." The traumatic stress literature is international, interdisciplinary—and complex. The PILOTS database is a powerful tool for finding your way through this literature. As with any tool, the skill with which it is used has a lot to do with the results you will obtain.

CONTROL GROUPS *[from Page 1]*

of control even with randomization, blinding, and other methodological features designed to enhance validity. Thus, the question is not "What is an appropriate control group for evaluating a new psychotherapy?" but rather, "What inferences can be drawn given the type of therapy control group that is used?" A number of authors have discussed this issue, but Borkovec (1993) provides an especially helpful framework. He distinguishes psychotherapy research designs based on the nature of the comparison group.

In a *no-treatment comparison design*, participants in a comparison group are assigned to a wait-list. This type of design is extremely useful in the early stages of investigation on a given treatment because it rules out numerous threats to internal validity. It is a very efficient way to determine whether a treatment is effective. The major drawback is that it provides no basis for inferring why that treatment is effective. A *nonspecific comparison design* provides somewhat more information about the mechanism behind a given therapy's effectiveness by attempting to control for the nonspecific effects of psychotherapy. If the therapy is shown to be effective relative to a placebo-like therapy or care as usual, there is greater certainty that the effectiveness is not merely due to factors that all therapies have in common, such as therapist contact and the expectancy of improvement.

However, Borkovec (1993) argues that a *dismantling design* is the optimal way to control for nonspecific factors and to generate data that provide more certainty about the mechanism of action behind any type of psychotherapy. In this design, an investigator systematically varies the active elements of a technique, usually including all elements in one condition. Sometimes the distinction between nonspecific designs and dismantling designs can be blurry, e.g., a "supportive" counseling condition can be used in either, depending on the extent of comparability between the supportive and active conditions. Lastly, Borkovec discusses *comparative designs*, in which active treatments are compared with one another. His view of such designs is quite negative, because active-active comparisons in practice often include inadequate control for differences in the quality with which each therapy is delivered. Nevertheless, these designs are widely used and can provide data of great practical significance if the different therapies can be equated for nonspecific factors and therapist quality, e.g., to compare treatments that vary greatly in cost.

So, what inferences can be drawn given the types of control groups that have been used in EMDR research? The studies that have compared EMDR to a wait-list control provided the first building block in establishing efficacy, but they did not yield any information about the mechanism behind the observed efficacy. The next evidence came from nonspecific comparison designs, which helped somewhat to rule out a placebo explanation for the effects observed in the wait-list comparison studies. Further information about the efficacy of EMDR has come from studies that have compared EMDR with and without eye movements, which are classic examples of a dismantling design. These studies raise serious questions about the role of eye movements in the efficacy of EMDR, but it is important to remember that they do not invalidate the efficacy findings—they merely indicate that the mechanism of action is unlikely to involve the hypothesized relationship between eye movements and brain activity. Whether it is the imaginal exposure component is hard to say at present. Dismantling designs need to go further in order to disentangle the role of imaginal exposure relative to other elements of EMDR. EMDR appears to compare favorably to cognitive-behavioral treatment, but the amount of evidence from comparative studies is too limited to support a firm conclusion. Additional comparative research, with strict quality and fidelity controls, is needed in order generate information about the efficacy of EMDR relative to other active treatments for PTSD.

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Borkovec, T.D. (1993). **Between-group therapy outcome research: Design and methodology.** *NIDA Research Monographs, 137*, 249-289.

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